

**REMARKS**

Claims 1-12, all the claims pending in the application, stand rejected. Claims 1 and 2 are amended. Claims 13-23 are newly added.

***Claim Rejections - 35 U.S.C. § 102***

**Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Yan (7,118,832).**  
This rejection is traversed for at least the following reasons.

Applicants are filing a verified translation of the priority document with regard to this application. Yan (7,118,832) was filed on January 8, 2003 while the priority application (Japanese Patent Application No. 2002-195458) was filed on July 4, 2002. Thus, Yan '832 should be removed from consideration as a reference.

***Claim Rejections - 35 U.S.C. § 103***

**Claims 1-8 and 12 are rejected under 35 USC 103 as being unpatentable over Stivers et al. (6,410,193) in view of Yan et al. (6,610,447) and Yan et al. (6,607,862).**

In framing the rejection, the Examiner characterizes the claimed invention and notes the improvements over the prior art identified by the Applicants in the specification, namely that if a difference in reflectance with respect to the wavelength of the inspection light is small between the surface of the buffer layer or the surface of the multilayer reflective film and the surface of the absorber layer, the contrast in the inspection becomes poor so that the accurate inspection cannot be achieved. The Examiner notes that a stated object of the invention is to obtain a reflective mask wherein a fine pattern can be formed in an absorber layer with high accuracy in shape, such that a sufficient contrast can be achieved in a pattern inspection.

**Stivers et al**

The Examiner looks to Stivers et al. for a teaching of a reflective mask having non-reflective and reflective regions responsive to light at different wavelengths that create (1) a first image with a contrast greater than 0.210 and that is formed by reflecting said first light off of said reflective mask; and (2) a second image with a contrast greater than 0.750 and that is formed by reflecting said second light off of said reflective mask, wherein said semiconductor

processing wavelength is within the EUV spectrum and said inspection wavelength is within the DUV spectrum. The Examiner admits that the teachings of Stivers et al. differ from those of the applicant in that the applicant teaches that the absorber is made of multi layers of Ta and Si.

Yan et al '447

The Examiner asserts that Yan et al. '447 teaches a reflective mask comprising a buffer layer and absorber and wherein the absorber layer can be multilayered, and notes that in one embodiment, the improved absorber layer 2400 is a Ta<sub>x</sub>N<sub>y</sub> film or Tantalum doped with Nitrogen in which  $x=1$  and  $y<0.6$ . In another embodiment, the improved absorber layer 2400 is Tantalum Nitride (TaN) in which the stoichiometry changes through the thickness of the film.

Yan et al '862

The Examiner looks to Yan et al. '862 for a teaching that the absorptive layer comprises silicon germanium, tantalum, or tantalum nitride.

The Examiner concludes that it would have been obvious to one having ordinary skill in the art to take the teachings of Stivers et al. and combine them with the teachings of Yan et al. '447 and Yan et al. '862 in order to make the claimed invention because it would have been obvious to choose the prior art combination of materials that would produce the desired etch contrast.

**Claims 1 and 2**

Applicants respectfully submit that the present invention, as now defined by amended claims 1 and 2, is patentably different from the combination of Stivers et al., Yan et al.'447, and Yan et al.'862. Amended claim 1 is substantially equivalent to a combination of Claims 1 and 4 as originally filed and amended claim 2 is substantially equivalent to a combination of claims 2 and 4 as originally filed. In Amended Claims 1 and 2, an etching selection ratio between the uppermost layer (15) and the lower layer (14) of the absorber layer when forming the pattern (14a) in the lower layer (14) is 5 or more.

Stivers et al., Yan et al.'447, and Yan et al.'862, taken alone or in any combination, neither disclose nor teach the etching selection ratio between the uppermost layer and the lower layer of the absorber layer.

Accordingly, Applicants respectfully submit that amended claims 1 and 2 should be allowable. Claims 3, 5-8, 12-21 are dependent from amended claims 1 and 2. Therefore, all of the claims 3, 5-8, and 12-21 should also be allowable.

***New Independent Claims***

In new independent claims 22 and 23, with reference without limitation to the exemplary embodiments of the present application, a buffer layer (13) having a resistance against an etching condition in forming the pattern (14a) in the lower layer (14) of the absorber layer and correcting the pattern is further provided between the multilayer reflective film (12) and the absorber layer (14, 15). In addition, the uppermost layer (15) exhibits a contrast value of 40% or more relative to the buffer layer (13) and the multilayer reflective film (12) with respect to a light having an inspection wavelength for use in an inspection of an absorber layer pattern (14a, 15a) formed in the absorber layer (14, 15) and is formed of an inorganic material having a resistance against an etching condition in forming a pattern (14a) in the lower layer (14). The contrast value is given by an equation of:

$$\text{Contrast Value (\%)} = (R1 - R2) / (R2 + R1) \times 100$$

where R1 represents a reflectance on the surface of the uppermost layer (15) with respect to the light having the inspection wavelength and R2 represents a reflectance of the surface of the buffer layer (13) or the multilayer reflective film (12).

However, Stivers et al., Yan et al.'447, and Yan et al.'862 neither disclose nor teach a combination of the buffer layer and the contrast value of the uppermost layer relative to the buffer layer and the multilayer reflective film.

Accordingly, Applicants respectfully submit that new independent Claims 22 and 23 should be allowable.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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